

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION**

ORDER NO. 93-026

SITE CLEANUP REQUIREMENTS FOR:

CITY OF REDWOOD CITY - REDWOOD CITY CORPORATION YARD

FOR THE PROPERTY AT:

1400 BROADWAY, REDWOOD CITY, SAN MATEO COUNTY

FINDINGS:

The California Regional Water Quality Control Board, San Francisco Bay Region (herein after called the "Regional Board") finds that:

1. The City of Redwood City (herein after called the "Discharger") owns and operates the Redwood City Corporation Yard located at 1400 Broadway, Redwood City, San Mateo County (the "Site").
2. According to San Mateo County Department of Health Services and Regional Board staff files, three underground storage tanks (one 500 gallon diesel, one 10,000 gallon diesel, and one 10,000 gallon gasoline) were removed from the Site on September 3, 1991. Following the tank removal, on September 4, 1991 six soil samples were collected from the former tank pit areas. The analytical results detected TPH-d up to 1400 ppm, TPH-g up to 480 ppm, and related BTEX constituents. Groundwater was encountered within the excavated area and free phase floating product was noted.
3. A preliminary investigation was conducted in 1991/1992 to determine if the shallow groundwater (14 feet bgs) beneath the site had been impacted by the leaking underground storage tanks. Three monitoring wells were installed and sampled. All three wells detected TPH-g ranging from 130 to 510 ppb. Monitoring well MW-1 also detected TPH-d at 150 ppb. In addition, all three wells detected solvents originating from an upgradient source.
4. A hydropunch investigation was conducted consisting of 21 grab water samples to determine the extent of groundwater contamination. The shallow groundwater zone pollution has been adequately defined in every direction except for the northernmost edge of the plume.

5. Aquifer testing was conducted during March 9 through March 12, 1992 to determine the long term pumping rate obtainable for the hydraulic conditions found at the site. The hydraulic conductivity was found to be approximately 129.2 gal/day/ft² and the transmissivity 2,260 gal/day/ft. A maximum pumping rate of one gal/min was determined. The radius of influence has yet to be determined.
6. A Feasibility study has been conducted at the site and several corrective actions have been suggested for final remediation of the site. Implementation of the selected remedial alternative and evaluation of its overall effectiveness is necessary.
7. An offsite source of chlorinated solvents primarily trichloroethylene (TCE), tetrachloroethylene (PCE), dichlorobenzene (DCB), and chlorobenzene (CB) has been detected within the area underlying the Redwood City Corporation Yard. It has been determined that the pollutants are emanating from the Rohm and Haas property located upgradient at 800 Chestnut Street, Redwood City. An investigation is underway to determine the extent of contamination associated with this site. Information obtained to date suggest that the solvents have commingled with four separate plumes within the vicinity; the Redwood City Corporation Yard located at 1400 Broadway, Redwood City, Redwood General Tire located at 1630 Broadway, Redwood City, a Chevron Service Station located at 1603 Broadway, Redwood City, and the Beeger Property located at 1135 Chestnut Street, Redwood City.
8. Due to the contiguous nature of the shallow groundwater pollution detected in this area, Regional Board staff has found it necessary to prepare coordinating Site Cleanup Requirements for Rohm and Haas and each of the sites named above in order to implement an effective cleanup of the polluted groundwater within this area.
9. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) in December 1991. Proposed Basin Plan Amendments were adopted by the Regional Board in September and October 1992 and are awaiting State Board approval. The Basin Plan and amendments contain water quality objectives and beneficial uses for the central San Francisco Bay and contiguous surface and groundwater.
10. The shallow groundwater zone underlying the site currently has no existing use. The potential beneficial uses of this groundwater zone underlying and adjacent to the Site include:
 - a. Industrial process water supply
 - b. Industrial service water supply

- c. Municipal and Domestic water supply
 - d. Agricultural water supply
11. The nearest surface water body to the site, approximately 1 1/2 miles away, is Redwood Creek. The existing potential beneficial uses of Redwood Creek include:
- a. Municipal and Domestic water supply
 - b. Agricultural water supply
 - c. Freshwater replenishment
 - d. Water contact Recreation
 - e. Non-contact water recreation
 - f. Fresh warm water habitat
 - g. Fresh cold water habitat
 - h. Wildlife habitat
 - i. Fish Spawning
 - j. Shellfish harvesting
12. The Dischargers have caused or permitted, and threaten to cause or permit waste to be discharged or deposited where it is or probably will be discharged to waters of the State and create or threaten to create a condition of pollution or nuisance.
13. This action is an Order to enforce the laws and regulations administered by the Regional Board. This action is categorically exempt from the provisions of the CEQA as 'Enforcement Actions by Regulatory Agencies', pursuant to Section 15321 of Title 14 of the California Code of Regulations.
14. The Regional Board has notified the Dischargers, responsible parties and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the discharge and provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.
15. The Regional Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the Dischargers shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.
2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.
3. Activities associated with subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS

1. Remediation Activities: The Discharger shall conduct site investigation, monitoring, and remediation activities as needed to define the current local hydrogeologic conditions, to define the lateral and vertical extent of soil and groundwater pollution, and remediate soil and groundwater pollution. Should monitoring results show evidence of pollutant migration, additional characterization and remediation may be required.
2. Nuisance Clause: The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.
3. Clean-up Levels - Soils: The clean-up goal for the source-area soils are as follows. For total petroleum hydrocarbons (TPH) the clean-up level shall be no greater than 10 ppm and non-detect (ND) for related BTEX constituents. All samples shall be analyzed using applicable EPA analytical methods using appropriate detection limits or methods shown through State or peer review approval to be equivalent to EPA methods.

Alternate soil cleanup levels may be proposed based on site specific data. If higher levels of pollutants to be left in soils are proposed, the Discharger must demonstrate that the alternative levels will not threaten the quality of the waters of the State, and that human health and the environment are protected. Final cleanup goals for the source-area affected soils must be acceptable to the Executive Officer. If any chemicals are left in the soil, follow up groundwater monitoring may be required.

4. Clean-up Goals - Groundwater: Final cleanup levels and goals for the polluted groundwater, including sources of drinking water, on-site and off-site, shall be background water quality as feasible, in accordance with the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California", and other applicable standards and shall be based on an evaluation of the cost effectiveness and a risk assessment to determine affect on human health and the environment, shall be approved by the Regional Board. These levels shall have a goal of reducing the mobility, toxicity, and volume of pollutants.
5. Reclamation: If the groundwater extraction and treatment is considered as an alternative, the feasibility of water reuse, re-injection, and disposal to the sanitary sewer must be evaluated. Based on the Regional Board Resolution 88-160, the Dischargers shall optimize, with a goal of 100%, the reclamation or reuse of groundwater extracted as a result of cleanup activities. The Dischargers shall not be found in violation of this Order if documented factors beyond the Dischargers' control prevent the Dischargers from attaining this goal, provided the dischargers have made a good faith effort to attain this goal. If reuse or re-injection is part of a proposed alternative, an application for Waste Discharge Requirements may be required. If discharge to waters of the State is part of a proposed alternative, an application for an NPDES permit must be completed and submitted, and must include the evaluation of the feasibility of the water reuse, re-injection, and disposal to the sanitary sewer.

C. PROVISIONS

1. The Dischargers shall comply with the Prohibitions and Specifications above, in accordance with the following schedule and tasks. In performing the tasks, should the Discharger experience difficulty with obtaining access to other properties, the Regional Board, as provided for under State Board Resolution 92-49, shall require uncooperative landowners and tenants of the property affected by the discharge to cooperate or, if necessary, to participate in the investigation, cleanup, and abatement.

a. TASK: SUBMIT A GROUNDWATER MONITORING PLAN

DUE DATE: MAY 1, 1993

Submit a groundwater monitoring plan, acceptable to the Executive Officer, that addresses monitoring of the groundwater wells representative of the conditions found in the shallow aquifer zone. The plan shall include monitoring of the groundwater areas where TPH-g, TPH-d, and BTEX constituents that originated from the former underground storage tanks located at the site. The monitoring plan may

be modified based upon the results obtained from the current investigation and subsequent investigations with concurrence from Regional Board staff. The sampling program shall be coordinated with the designated Rohm and Haas representative(s).

- b. **TASK:** SUBMIT A WORKPLAN TO FULLY CHARACTERIZE THE CONTAMINATED SOIL AND GROUNDWATER ON AND OFF-SITE

DUE DATE: JUNE 1, 1993

Description: The Dischargers shall submit a technical report acceptable to the Executive Officer outlining the tasks necessary to characterize the vertical and horizontal extent of the contaminated soil associated with the three former underground storage tanks. Additionally, the Discharger must complete the characterization of the contaminated groundwater plume. This will include the installation of additional monitoring wells (based upon the hydropunch results) which will be utilized for monitoring plume migration and effectiveness of the selected corrective action to be taken.

Furthermore, in addition to contaminant characterization, the radius of influence should also be determined at this stage in order to complete the evaluation of aquifer properties needed for remediation design.

- c. **TASK:** IMPLEMENTATION OF THE GROUNDWATER MONITORING PLAN

DUE DATE: Sixty days after the written approval by the Executive Officer of the groundwater monitoring plan.

- d. **TASK:** SUBMIT THE RESULTS OF THE SOIL AND GROUNDWATER CONTAMINATION AS OUTLINED IN TASK a.

DUE DATE: Ninety days after the written approval by the Executive Officer of the workplan for site characterization as outlined in task a.

- e. **TASK:** SUBMIT A REVISED VERSION OF THE SITE REMEDIATION PLAN SUBMITTED APRIL 1992 OUTLINING THE SELECTED ALTERNATIVE WHICH ADDRESSES BOTH SOIL CONTAMINATION AND GROUNDWATER CONTAMINATION

DUE DATE: NOVEMBER 1, 1993

Submit a Site Remediation Plan, acceptable to the Executive Officer, that fully describes remedial actions to be taken to control, abate and/or remove pollution found in the soils on site and the groundwater contamination detected in the shallow aquifer.

The plan shall describe the selected alternative as outlined within the Third Quarterly Report submitted by your consultant Wahler Associates in April 1992. As discussed, the alternative must address the groundwater contamination in addition to the soil contamination. The plan must be accompanied by a comprehensive schedule for implementation.

- f. **TASK:** IMPLEMENTATION OF THE REMEDIAL ACTIONS FOR ON-SITE SOILS AND GROUNDWATER IN THE SHALLOW AQUIFER ZONE

DUE DATE: Sixty days after the Executive Officer's written approval of the remedial action plan pursuant to Section C.1.d above.

As you are aware, the contamination originating from your site has commingled with the chlorinated solvent plume originating from the property located at 800 Chestnut Street. As discussed, the groundwater remediation must be coordinated with the Rohm and Haas representatives in order to effectively remediate the polluted groundwater within the vicinity.

- g. **TASK:** SUBMIT A REPORT ON THE EFFECTIVENESS OF THE FINAL REMEDIAL ACTION FOR BOTH SOILS AND GROUNDWATER

DUE DATE: One year after implementation of the Remedial Action Plan and annually thereafter.

Submit a technical report, acceptable to the Executive Officer, which evaluates the effectiveness of the remedial actions for the soil and groundwater emanating from the Site. This report should include implementation and/or modifications or additional measures necessary to fully remediate or contain the groundwater.

2. The Dischargers shall submit to the Regional Board acceptable reports on the compliance with the requirements of this Order, and acceptable activity reports that contain descriptions and results of the work performed. These reports are to be submitted according to a program prescribed by the Regional Board and as outlined below.

- a. **ON A QUARTERLY BASIS**, the Discharger shall submit status reports, which may be prepared in a business letter format, documenting compliance with this Order commencing July 15, 1993. Thereafter, reports shall be due quarterly on the 15th of the month. Each quarterly report shall cover the previous calendar quarter and include at the following information:
 - i. Summary of the work completed since submittal of the previous report, and work projected to be completed before the submittal of the next report.
 - ii. Identification of the obstacles which may threaten compliance with the schedule set forth by this Order, and what actions are being taken to overcome these obstacles.
- b. **ADDITIONALLY ON A QUARTERLY BASIS**, technical reports documenting quarterly groundwater monitoring shall be submitted by the Dischargers to the Regional Board commencing **July 15, 1993**, and covering the previous calendar quarter. Each quarterly monitoring report shall include, but not limited to, the following information:
 - i. Cumulative tabulated results of free product measurements and water quality sampling analyses for all monitoring wells. This data shall be accompanied by contamination isoconcentration plume maps for each chemical constituent of concern for the first water bearing formation based upon the results of the recent sampling event.
 - ii. A cumulative tabulation of all well construction details and quarterly water level measurements.
 - iii. Quarterly updated water table and piezometric surface maps, based upon the most recent water level measurements for all affected water bearing zones for all on-site wells.
 - iv. A cumulative tabulation of volume of extracted groundwater, quarterly chemical analyses results for all extraction wells, and pounds of pollutants removed during the quarter and total pounds of pollutants removed to date.
 - v. Reference diagrams and maps including any updated geologic cross sections describing the hydrogeologic conditions of the site, and appropriately scaled and detailed base maps showing the location of all monitoring wells and extraction wells, and


identifying facilities and structures.

3. The Dischargers may, by written request, seek modifications or revisions of this Order or any program or plan submitted pursuant to this Order at any time. This Order and any applicable program, plan, or schedule may be modified, terminated, or revised by the Regional Board.
4. If the Dischargers are delayed, interrupted or prevented from meeting one or more of the completion dates specified in this Order, the Dischargers shall promptly notify the Executive Officer. If, for any reason, the Dischargers are unable to perform any activity or submit any document within the time required under this Order, the Dischargers may make a written request for a specified extension of time. The extension request shall include justification for the delay, and shall be submitted to the Regional Board in advance of the date on which the activity is to be performed or the document is due. The Regional Board staff may propose an amendment to the Order and bring the matter to the Board for consideration.
5. Nothing in this Order is intended or shall be construed to limit or preclude any right the dischargers have to seek administrative and/or judicial review of any orders and determinations of the Board and/or its staff.
6. All hydrogeological plans, specifications, technical reports and documents shall be signed by or stamped with the seal of State registered geologist, registered civil engineer, or certified engineering geologist.
7. All samples shall be analyzed by a State certified laboratory or laboratory accepted by the Regional Board using approved EPA methods for the type of analysis to be performed. All laboratories or the consultant shall maintain quality assurance/quality control records for Regional Board review for a period of six years.
8. The Dischargers shall maintain in good working order, and operate in the normal standard of care, any facility or control system installed to achieve compliance with the requirements of this Order.
9. Copies of all correspondence, reports, and documents pertaining to compliance with the Prohibitions, Specifications, and Provisions of this Order shall be provided to the following agencies:
 - a. San Francisco Bay Regional Water Quality Control Board
 - b. San Mateo County Health Department
 - c. Cal-EPA, Department of Toxic Substances Control
 - d. City of Redwood City

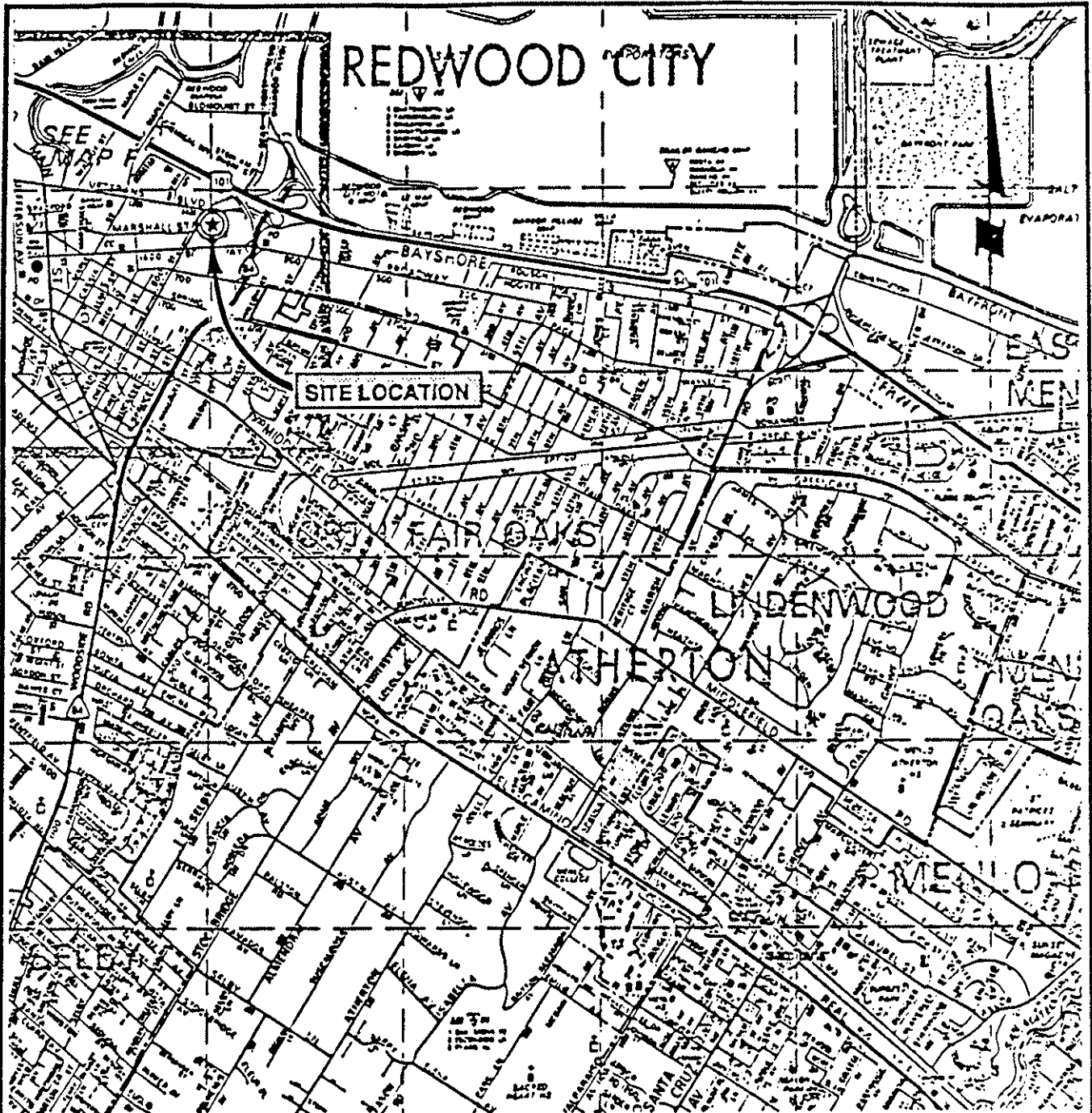
10. The Dischargers shall permit, within the scope of each of their authorities, the Regional Board or its authorized representative, in accordance with Section 13267 (c) of the California Water Code:
 - a. Entry upon dischargers' premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
 - b. Access to copy any records required to be kept under the terms or conditions of this Order.
 - c. Inspection of any monitoring equipment or methodology implemented in response to this Order.
 - d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the Discharger.
11. The Dischargers shall file a report in a timely manner on any changes in site occupancy and ownership associated with this facility/property described in this Order.
12. If any hazardous substance is discharged in or on any waters of the State, or discharged and deposited where it is, or probably will be discharged in or on any waters of the State, the Dischargers shall report such a discharge to this Board, at (510) 286-1255 on weekdays during office hours from 8:00 a.m. to 5:00 p.m., and the Office of Emergency Services at (800) 852-7550 during non-office hours. A written report shall be filed with the Board within five (5) working days and shall contain information relative to: the nature of the waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention, Control and Countermeasure Plan in effect, if any, estimated size of affected area, nature of effects, corrective measures that have been taken or planned, and a schedule of these activities, and persons notified.
13. Any provisions of this Order substantially identical to provisions which the State Water Board or a court of law determines to be in excess of the Board's legal authority shall have no force or effect in this Order.
14. This Order is intended to be the primary regulating document by which site cleanup shall proceed on a regional basis for the Dischargers and properties named herein, with the Regional Board as lead agency, and Lowell Sue - or her successor - of the City of Redwood City as the primary contact representing the named Discharger.

15. If the Executive Officer finds that the Discharger(s) have failed to comply with the Provisions of this Order, he is authorized to issue a complaint for Board consideration of Administrative Civil Liabilities, or after approval of the Board Chairperson, to request the Attorney General to take appropriate action against the Discharger(s), including injunction and civil remedies, if appropriate.
16. Pursuant to Section 13304 of the California Water Code, the Discharger(s) is (are) hereby notified that the Regional Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Regional Board to investigate unauthorized discharge of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial actions. Upon receipt of a billing statement for such costs, the Discharger(s) shall reimburse the Regional Board.
17. The Regional Board will review this Order periodically and may revise the requirements when necessary.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on March 17, 1993.



Steven R. Ritchie
Executive Officer



BASE FROM THOMAS BROS.

SCALE

0 1/2 1 MILE

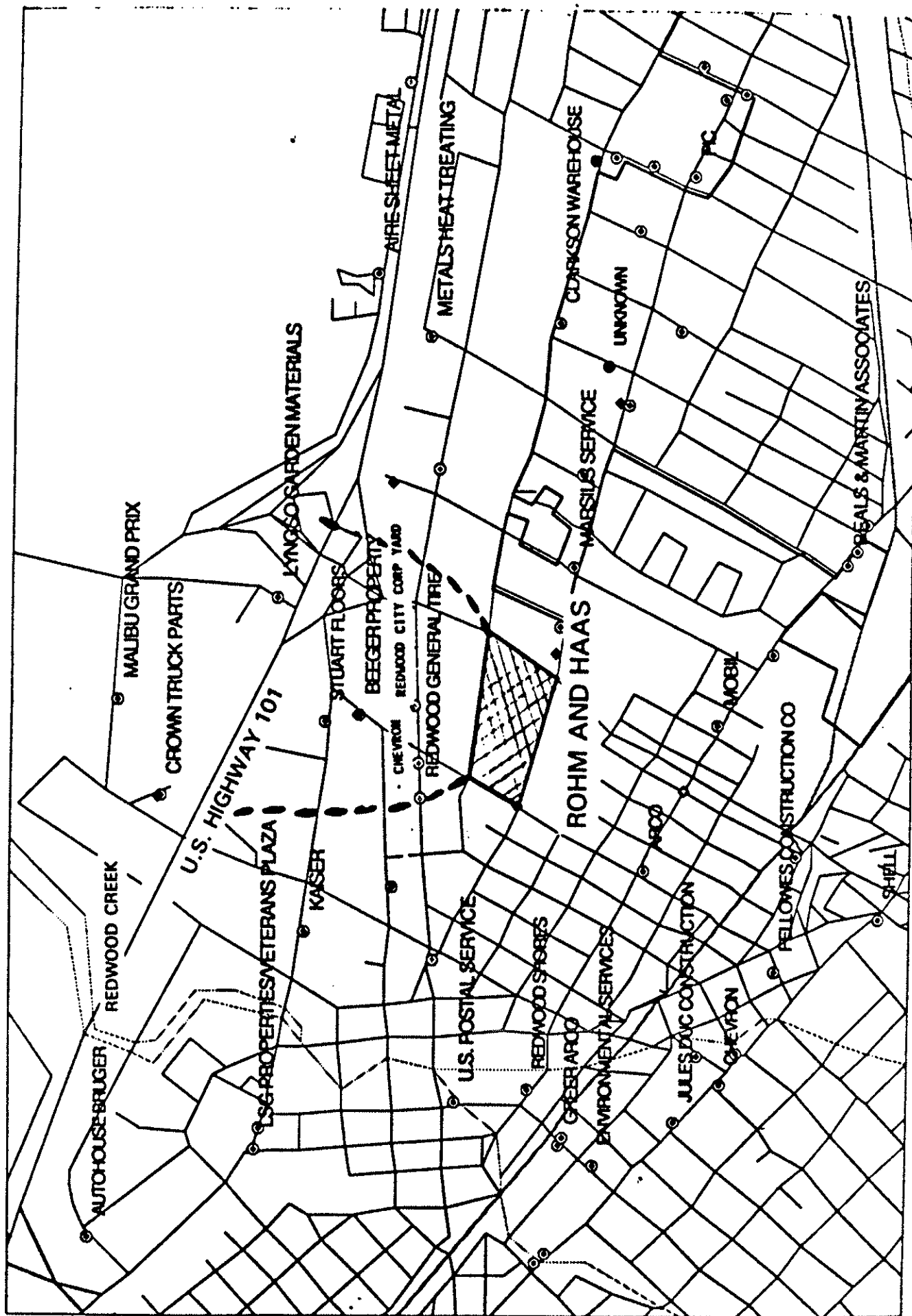


Figure 1-2 Surrounding Sites and Extent of Groundwater Contamination
 Rohm and Haas Redwood City, San Mateo County